

WHAT IS CLAIMED IS:

1. An LCD, comprising:

a substrate;

a pixel array formed on a display region of the substrate in a matrix configuration;

5 a plurality of first terminals formed at a non-display region of the substrate, the first terminals having a contact region and applying an electrical signal to a plurality of column lines and row lines of the pixel array;

a protective layer having contact holes formed corresponding to the contact region of each of the terminals, and covering the pixel array and the first terminals; and

10 a plurality of first pads formed on the protective layer to be overlapped with each of the first terminals with a surface area greater than the contact region, the first pads electrically connected through the contact holes to each of the first terminals at the contact region and substantially electrically connected to an external circuit at a region other than the contact region.

15 2. The LCD of claim 1, wherein the protective layer has 5 μm or more thick.

3. The LCD of claim 1, wherein the first terminals are aligned in a zigzag fashion of two rows.

4. The LCD of claim 3, wherein each of first inner terminals arranged along an inside portion of a first row among the first terminals, has a first contact region at an inner portion thereof and each of first outer terminals arranged along an outside portion of
20 a second row among the first terminals has a second contact region at an outer portion thereof.

5. The LCD of claim 4, further comprising at least one or more IC device

output terminals of which are bonded to the region other than the contact region of the first pads by a bump bonding method.

6. The LCD of claim 5, further comprising a plurality of second pads which are formed on the protective layer to be aligned along an edge portion of the substrate in one row, and wherein input terminals of the IC device are respectively bonded to one side of each second pad.

7. The LCD of claim 6, wherein the other side of each second pad is bonded to terminals of a flexible printed circuit board.

8. The LCD of claim 6, wherein the plurality of second pads are respectively compiled through at least one or more contact hole to a plurality of second terminals that are formed at a lower portion of the protective layer.

9. The LCD of claim 8, wherein an entire surface area of at least one or more contact region of each second terminal is no more than one third of an entire surface area of each terminal.

10. The LCD of claim 9, wherein the second terminals respectively have the contact regions that are arranged at both ends of the second terminals in a longitudinal direction.

11. The LCD of claim 9, wherein the second terminals respectively have the plurality of contact regions that are arranged at regular intervals in the longitudinal direction.

12. The LCD of claim 9, wherein the second terminals respectively have an elongated contact regions that are arranged at both ends of the second terminals in a lateral direction.

13. The LCD of claim 1, wherein the first pads are aligned in one row, and connected through an area except the contact region to terminals of a TCP, a COF or an FPC.

14. A reflective type LCD, comprising:

5 a first substrate having a plurality of pixels formed in a matrix configuration and a plurality of terminals that apply an electrical signal to the pixels formed at an edge portion of said first substrate;

a second substrate formed facing said first substrate;

a liquid crystal layer interposed between said first substrate and second substrate;

10 a reflective electrode formed on the pixels of said first substrate and having an irregular portion of relatively different heights;

a protective layer formed from a first region to a second region between the first substrate and having an opening exposing each contact region of the plurality of terminals, the protective layer having a same surface structure as the reflective electrode at the first region and a flat surface structure at the second area; and

15 a plurality of pads formed on the protective layer to include the opening and have a surface area greater than the opening, the pads bonded to a terminal part of an external circuit at the region other than the opening.

15. An LCD, comprising:

20 a substrate having a display region at a center portion thereof and a non-display region at a peripheral region thereof;

a plurality of terminals for electrically connecting an external circuit and a circuit of the display region to ends of signal lines extended from the display region;

and the non-display region, and a plurality of pads formed on a flat protective layer for covering the terminals, characterized in that

wherein pads are respectively formed with a first contact region and a flat second contact region, and each of the pads contacts a corresponding terminal through a pad contact hole formed on the protective layer, at the first contact region, and each of the pads is electrically connected through an anisotropic conductive resin to a terminal of the external circuit by a pressing process at the flat second contact region.

16. An LCD, comprising:

a first substrate having a pixel array circuit in which a plurality of pixels are formed in a matrix configuration a plurality of data pads formed at a first peripheral region to apply a data signal through each data line to the pixels, and a plurality of gate pads formed at a second peripheral region to apply a gate signal through each data line to the pixels;

a second substrate having a color filter array formed corresponding to the pixels of the first substrate and a transparent common electrode is formed thereon;

a liquid crystal layer formed between the first substrate and the second substrate;

at least one data driving IC chip that is bump-bonded to the data pads at the first peripheral region by a COG method; and

a gate driving IC chip bonded to the gate pads at the second peripheral region by a COF method,

wherein each of the data pads has a surface area larger than a first contact region contacting the data line and bonded to each terminal of the data driving IC chip at an area other than the first contact region, and the gate pads respectively have a surface area larger than a second contact region contacting the gate line and bonded to each terminal of

the gate driving IC chip at the area other than the second contact region.

17. A method for manufacturing an LCD, comprising the steps of:

depositing a first conductive material formed on a substrate and then performing a first photolithography process to form a gate pattern including a gate electrode, a gate line, and a gate terminal part;

covering the gate pattern with a gate insulating layer;

depositing and photo-etching a semiconductor material and a second conductive material formed on the gate insulating layer to form a data pattern including an active pattern, a source electrode and a drain electrode, a data line and a data terminal part;

covering a resultant substrate with a protective layer;

performing a second photolithography process on the protective layer to open a contact region of the source electrode, the gate terminal part and the data terminal part;

depositing a conductive material on the protective layer and then performing a third photolithography process to form a pixel electrode and a bonding pad, the bonding pad having a surface area larger than the contact region; and

bonding a terminal part of a driving IC device at a region other than the contact region of the bonding pad.

18. The method of claim 17, wherein the pixel electrode formed on the protective layer is a transparent electrode formed of ITO or IZO.

19. The method of claim 17, wherein the protective layer has an irregular surface, and the pixel electrode is formed of a reflective metallic material selected from the group consisting of Al, an Al alloy, Ag and an Ag alloy.

20. The method of claim 17, wherein the driving IC device is mounted by a

TCP, COF or COG method.

FORMER SHEET